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APPLICATION NO.	FILING DATE	FIRST-NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/135,180	08/17/1998	YUZO OHTSURU	5586D-6845	8990

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EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT PAPER NUMBER

2612

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/135,180

Applicant(s)  
Ohtsuru

Examiner  
Luong Nguyen

Art Unit  
2612



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above, claim(s) 5-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other:

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## DETAILED ACTION

### *Election/Restriction*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-4, drawn to a solid-state image pickup device comprising plurality of picture elements including light receiving elements and storage elements, classified in class 348, subclass 317.
  - II. Claims 5-15, drawn to a solid-state image pickup device comprising a drive circuit for giving a first electric potential for forming a potential barrier, and giving a second electric potential for extinguishing the potential barrier between the channel regions and the semiconductor substrate region, classified in class 348, subclass 311.
  - III. Claims 16-20, drawn to a solid-state image pickup device comprising plurality of transfer electrodes apply first transfer clock and a second transfer clock having different cycle, classified in class 348, subclass 319.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I, II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, the invention as claimed in group I can be a solid-state image pickup

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device which does not include the structure claimed in group II or structure claimed in group III.

The reasoning is the same for the other two groups. See MPEP § 806.05(d).

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Anthony Orlea on 11/13/2002 a provisional election was made with traverse to prosecute the invention of group I, claims 1-4. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Priority***

5. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Specification***

6. The abstract of the disclosure is objected to because that the abstract needs to be re-written to describe the elected invention.

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Correction is required. See MPEP § 608.01(b).

7. The disclosure is objected to because of the following informalities:

In specification, on page 13, the element "16" is used for "channel region 16" in line 6, and "injection region 16" in lines 9-10.

On page 15, lines 21, 22, 25 and 26, "Fig. 3" should be changed to --Fig. 6--.

Appropriate correction is required.

#### ***Claim Objections***

8. Claims 1-3 are objected to because of the following informalities:

Claim 1 (line 19), "the incident lights" should be changed to --the incident light--.

Claims 2-3 are objected as being dependent on claim 1.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazui (US 5,121,192) in view of Parulski et al. (US 5,668,597).

Regarding claim 1, Kazui discloses a solid-state color imaging device, comprising a semiconductor substrate (N-type semiconductor substrate 50, column 4, lines 5-18, figures 4-6); a semiconductor region (P-type diffusion layer 52, lines 5-18, figures 4-6); a plurality of channel regions (channel regions 1, lines 5-18, figure 3-6); a plurality of picture elements (cells CE, lines 5-18, figure 3); a plurality of transfer electrodes (transfer electrodes 3, 4, lines 5-18, figures 3-6); light receiving elements (light receiving portion LR, column 4, lines 33-40, figure 6); storage elements (charge accumulation portion CA, column 4, lines 33-40, figure 6).

Kazui fails to specifically disclose a first set of plurality of light receiving elements in which at least one of the corresponding transfer electrodes is activated and simultaneously at least one of the transfer electrodes is inactivated in first and second image pickup operations; and a second set of plurality of light receiving elements in which all of the corresponding transfer electrodes is inactivated in the first image pickup operation, and at least one of the transfer electrodes is activated and simultaneously at least one of the transfer electrodes is inactivated in second image pickup operation. However, Paruski et al. disclose an electronic camera employs a progressive scan image sensor with a fast dump structure 62 (see abstract, figure 1). Paruski et al. disclose the first image pickup operation is at the time the first two lines 1 and 2 (first set light receiving elements) are read out (transfer electrodes is activated) and the two lines 3 and 4 (second set light receiving elements) are eliminated (transfer electrodes is inactivated); and second

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image pickup operation is at the time the two lines 5 and 6 (first set light receiving elements) are read out and the two lines 7 and 8 (second set light receiving elements) are eliminated (figure 10, column 7, lines 1-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Kazui by the teaching of Parulski et al. in order to provide a high quality progressive scan still image (column 6, line 51).

Regarding claim 2, Parulski et al. disclose wherein said first set of light receiving elements and said second set of light receiving elements are arranged in a matrix form in a predetermined region on the basis of a predetermined arranged rule (figure 10).

Regarding claim 3, Parulski et al. disclose wherein said first set of light receiving elements and said second set of light receiving elements are aligned in a row direction, and said first set of light receiving elements and said second set of light receiving elements are alternately arranged in a column direction (figure 10).

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kazui (US 5,121,192) in view of Parulski et al. (US 5,668,597) further in view of Takahashi et al. (US 6,288,744).

Regarding claim 4, Kazui and Parulski et al. fail to specifically disclose wherein a channel region under the transfer electrode corresponding said first light receiving element and a channel

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region under the transfer electrode corresponding said second light receiving element differ in their concentration of impurities. However, Takahashi et al. disclose a solid-state image pickup device in which the potential well in the channel region 41 can be made deeper by adding more N-type impurities than those of channel region 31 (figure 5, column 8, lines 18-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Kazui by the teaching of Parulski et al. in order to let charges can be efficiently transferred between two channel regions.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Frame (US 4,954,900) discloses imaging and wide sector searching apparatus.

Stekelenburg et al. (US 5,517,24) disclose charge coupled imaging device camera provided with such an imaging device.

Watanabe (US 5,703,641) discloses solid state color image pickup device reproducing a color image.

Hamada (US 6,118,481) discloses solid state image pick-up device and image pick-up apparatus.

Watanabe et al. (US 6,351,284) disclose method and apparatus for driving solid state image sensor.



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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Luong Nguyen** whose telephone number is **(703) 308-9297**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Wendy Garber**, can be reach on **(703) 305-4929**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231


**or faxed to:**

(703) 872 - 9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

LN LN  
11/14/2002

  
WENDY R. GARBER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600